BVIR User Manual

VERSION：2.0

Note, Tip and Cautions

NOTE：A NOTE indicates important information that helps you make better use of device.

TIP：A TIP indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

CAUTION：A CAUTION indicates a potential for property damage, personal injury, or death.

Please Note：This manual describes how to better use the system operation of device, please reading thoroughly before doing the system operation. The updated information in this manual is subject to change without notice due to operation maybe different if the system is upgraded at a later time. Please always state the version No. xx indicated in the cover page for any question you may have.

© 2010 NEWARE。All rights reserved.

Reproduction in any manner without the written permission of NEWAE Ltd. is strictly forbidden.

March 2010　　VERSION：2.0

To Customers:

Thank you for your concern and support to “NEWARE” brand series products!

Before using this system, please read this user manual seriously in order to use the system more better. For the continuously upgrading, please refer to the latest version and this version is only for reference.

- We are committed to supplying high-quality product of battery formation, grading and testing device. During more than 10 years development, our product has passed strict inspection and obtained a number of certifications. We have accumulated more than 8000 business partners throughout institutions, government departments, enterprises and trading companies. NEWARE Technology Ltd. has become the industry mainstream supplier with customer admitted.
- Shenzhen NEWARE Technology Ltd has passed the ISO9001: 2000 quality management system certification, registered “NEWARE” trademark, and adopted global advanced SAP software system as company business processes management platform. In order to achieve sustainable development, NEWARE now is on its way to cut down our carbon emissions. At the same time we are pursuing an optimal service both from better performance against with lower cost product and perfect after-sales service to meet customer’s various needs.
- Under the advanced integrated project management system, our software has achieved CMMI 3 level. It guaranteed the consistency between the development and the production. Solved the customer’s special needs.
- For any operation problems, please have no hesitate to contact our service line: 800-830-8866, our technical supporting engineer will work out proper solutions for you.
- Browse more type of models, download and upgrade your software and consult information please visit our website：http://www.neware.com.cn。

CONTENTS

1 INTRODUCTION 5
1.1 INSPECTION 5
1.2 SECURITY 5
1.3 OVER-PRESSURE CATEGORY 5
1.4 PRECAUTION 6
2 OVERVIEW 7
2.1 OVERVIEW 7
2.2 APPLICATIONS 7
2.3 TECHNICAL SPECIFICATIONS 7
3 STRUCTURE 9
3.1 BUTTONS 9
3.2 SCREEN 9
3.3 LED INDICATORS 10
4 MEASURING PROCEDURE 11
4.1 PREPARATION 11
4.2 STANDARD MEASURING PROCEDURE 12
4.3 COMPARISON 12
4.4 START/SHUTDOWN THE BUZZER 13
4.5 HOLD 13
4.6 VIEW HISTORY DATA 14
4.7 CALIBRATION 14
4.8 BATTERY SHORTAGE TIPS 15
4.9 SHUTDOWN AUTOMATICALLY 15
APPENDIX 16
OPERATION NOTICES 16
HOW TO MAINTENANCE 16
AFTER SALES SERVICE 17
SERVICE ITEMS 17
EXCEPTION 17
REPLACEMENT 17
CUSTOMER OBLIGATION 17
CONTACT NEWARE 19

1 INTRODUCTION

Thank you for choosing our product, In order to make your operation more convenient, please read this manual before using.

1.1 INSPECTION

When you get this product, please check it over if there is any problem in the transportation. Especially the accessory, included panel buttons and the wire. If there is obvious damage, or does not work in accordance with the instructions, please contact the NEWARE sales engineer.

Accessory

a manual
4 test pen or polymer fixture
a recharger
100mΩ standard resistance

Transportation

To make use of the original packing materials the company provided in the transportation to avoid unnecessary losses.

1.2 SECURITY

Danger

This product is designed in accordance with relevant safety standards, and passed the safety tests before transportation. But using the equipment in the wrong way will be harmful to the human body; the equipment will also be damaged. Before using make sure you are in accordance with the order of the operating manual and the operating environment.

Notations Used in This Manual

The following instruction of warning and note are representative important in the manual.

"WARNING"

The warning is to alert you to the possibility of a dangerous safety condition that could result in damage to the NEWARE equipment, damage to the battery under test, or very serious injury or death to you and surrounding people

"CAUTION"

The Caution message is to alert you to potential conditions less severe than the Warning, but where damage could still occur.

"NOTE"

A Note shows key information, an easier way to do something, or provide a better 4understanding of what is being presented.

"TIP"

A Tip is to inform you of an alternate method or a good idea.

1.3 OVER-PRESSURE CATEGORY

This product meets the class I over-pressure measurement of product standard. In order to ensure the safe operation of measurement product , IEC 60664 has established a safety standards for variety of electrical environment, from CAT I to CAT IV is divided into four categories, called over-pressure standards. They are defined as follow:

CAT I: Through a transformer or similar electrical circuit connected to the AC outlet on the secondary electrical circuit.

CAT II: Directly connected to the AC power output devices on the electrical circuit. (Portable tools, home appliances, etc.)

CAT III: Connected to the electrical circuit of the distribution box on the heavy equipment , which from the distribution box to the DC circuit of the AC outlet.

CAT IV: Introduced from the introduction of overhead line to line, meter, leakage current protection device (distribution box).

The high level classification corresponding of high instantaneous electrical energy through it, so if an equipment design to meet the CAT III environment, it can withstand the more instantaneous energy than CAT II standards. If an excessive measuring device is used at a higher standard of environment, it will have a serious accident, which must be avoided.

1.4 PRECAUTION

Warning

1. The following precaution content is to ensure the operations security that all of the function of this device can be used under the features. The maximum voltage between input and ground is 25V AC / DC, do not try to measure the ground voltage more than 25V.
2. Ensuring adequate ventilation, when measuring the battery. When the measurement electrode contact the battery electrode, it maybe produce sparks also the flammable gas such as hydrogen.

Caution

1. Verify that the power terminals and measuring terminals connected correctly.
2. To avoid damage equipment, do not attempt to measure more than 25V of AC/DC voltage.
3. Do not try to plus a voltage on the power positive (SOURCE+) terminal and measuring (SENSE+) terminal or power negative (SOURCE-) terminal and measurement negative (SENSE-) terminal, which can damage equipment.

Note

1. This device is not waterproof or dustproof. To avoid damage, do not use in wet and dusty environments.
2. Before using this product, make sure the insulating wire is not damaged, and the pen is not exception exposed, please change a new model table pen when electric shock in this case.
3. Do not use the device in the sun, heat, moisture and fogging which the product may be damaged, and the product insulation deterioration, it will not meet the design requirements of performance.

Tip

1. Accurate measurement is basically impossible implementation in magnetic interference, as in the transformer accessories, big or strong electromagnetic current to the places (such as radio stations).
2. Using the distribution measurement pen or fixture in measurement

Service

1. When you first use this product, verify that the equipment is working properly, confirm that during the transport or storage the equipment is not damaged. If you find any problem, contact your sales representative of the NEWARE.
2. When sending product rework, please remove the batteries to prevent damage during transport. Add cushions in the box to prevent shaking during transport. Be sure these details of the product, the NEWARE will not bear the loss arising during transport.

2 OVERVIEW

2.1 OVERVIEW

BVIR battery voltage and inter-resistance testing was specifically designed for testing the inner-resistance of secondary battery, lead-acid cell, nicked-cadmium cell, lithium battery, as well as testing the open circuit voltage.

2.2 APPLICATIONS

- Complicated comparison: BVIR can compare the testing inner-resistance and voltage value with the presetting inner-resistance and voltage.
- Edit and view data: 99999 groups of data can be stored in BVIR, provide a convenient way to edit and view the measuring data.
- Calibration: there are zero calibration and full range calibration.
- Shutdown automatically: save power by shutdown automatically, the default time is half hour after using.
- Low battery prompting: BVIR will prompt user when battery is low.

2.3 TECHNICAL SPECIFICATIONS

Indicators Project		indicator parameter	
Measuring method		Measuring in AC power	
Voltage	Voltage Range	0～20V	
	Accuracy	0.1%	
Resistance	Measurement range	20mΩ\200mΩ\2000mΩ there automatic/ Manual switch	
	Accuracy of component process range	0～200mΩ	1%
		200mΩ ～ 2000mΩ	3%（excluding 200mΩ）
A/D mode		SAR 12-bit successive comparison method	
Frequency	Test frequency	1KHz	
	Sampling rate	1000groups/S	
Response time		Display refresh5/S	
Open terminal		AC5V(RMS)	
Power		<2W	
USB I/F		USB 2.0 Full Speed	
Preheating		3 minutes	
Limit voltage		25V	

Requirements of equipment work environment

Indicators Project	indicator parameter
Operating temperature range	0℃~40℃
Storage temperature range	-10℃~50℃
Operating humidity range	30% ~ 80% RH（No condensation）
Relative humidity range storage environments	30% ~ 90% RH（No condensation）
Use of premises	Both indoor and outdoor, easy carry

Fixtures and equipment size specifications

Indicators Project	Indicator parameter
Accessory	4 test pen or polymer fixture
Volume	W*D*H: 120*75*25(mm)
Weight	About 0.5Kg

3 STRUCTURE

BVIR consists of buttons, screen, LED indicators and a pen.

3.1 BUTTONS

Figure1 the shape of the device

1 Resistance display	Display the measurement of the resistance
2 Voltage display	Display the measurement of the voltage
3 LEDs lamp	Show the battery pass the test
4 Hold key	Lock the current contents screen and query historical data
5 Buzzer key	open or shutdown buzzer
6 Cursor key	Move the cursor to the left position
7 Positive pole sense terminal	The interface connecting the sense pen
8 Negative pole sense terminal	The interface of connecting the source pen
9 Value keys	Increase the value
10 Comparing button	switch the current mode to comparing mode
11 Adjusting button	The zero and span calibration
12 LEDs lamp	Show the battery fail test
13 Record data group number	Display the record data group numbers

3.2 SCREEN

The measuring values and measuring account were displayed on the screen, the maximum and

minimum value of inner-resistance and voltage as well as the group numbers were displayed on the screen when it is under the comparison interface.

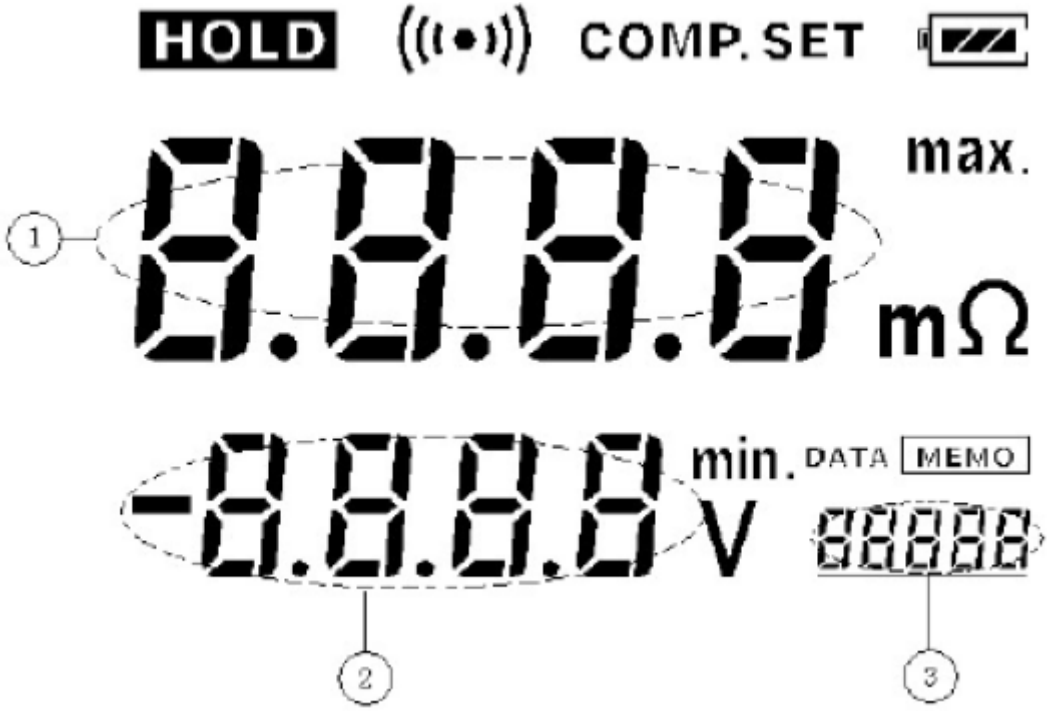


Figure1 The screen of BVIR

As shown in Figure1, ① is the value of inner-resistance, ② refer to voltage value, ③ is the record account, mΩ is the unit of inner-resistance, V is the unit of voltage, "HOLD" appears when the screen is locked, appears when the buzzer is opened. stands for the battery capacity, "min", "max" and "MEMO" appears under the compassion application, "DATA" appears while editing and viewing the data record.

3.3 LED INDICATORS

√ when it lights up, it means the comparison has passed.

× when it lights up, it means the comparison is failed.

4 MEASURING PROCEDURE

4.1 PREPARATION

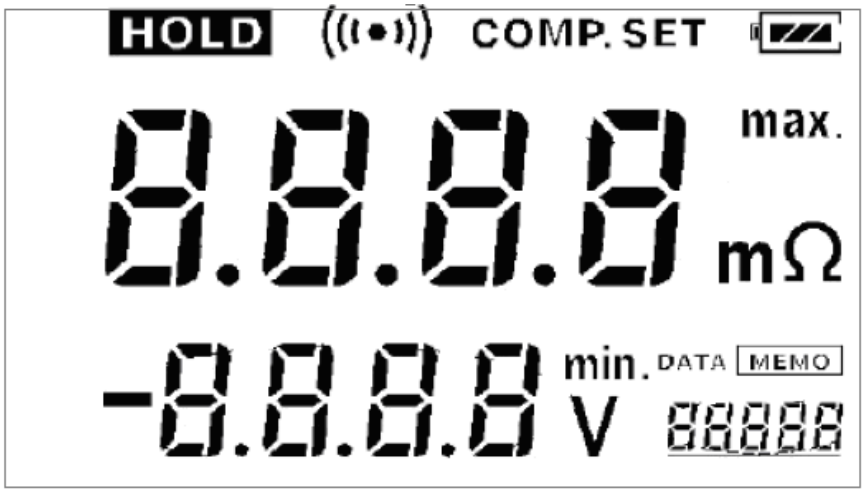
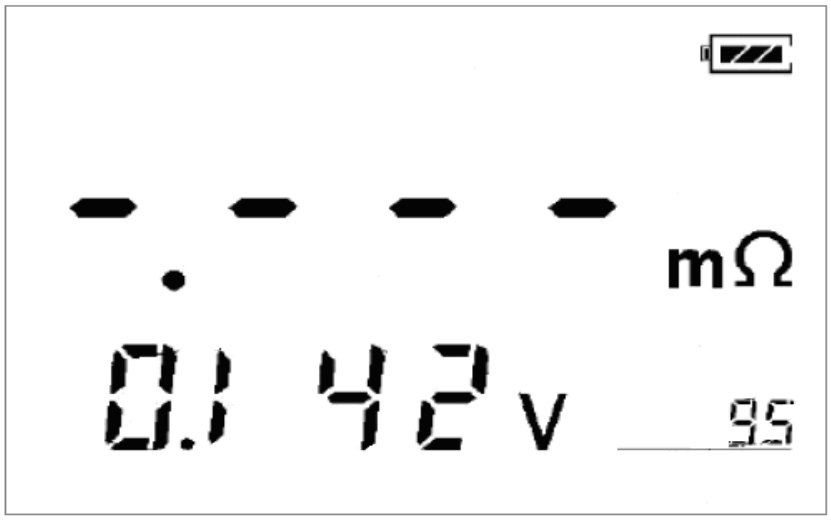


Figure3 the screen after boot

1. Figure 3 show the screen in 3 seconds after there pressing the power button, after 3 second the screen show as Figue4, at this point the voltage is beating, wait for 2 minutes warming-up time the screen voltage stability, adjustment the "↑", "↓" button, change the group number view the historical data
2. Join the pen or the polymer jig, connect the four terminals, SOURCE + / - and the SENSE + / -,Figue4 shows not connected to the battery status.



Figue4 stable display screen

1. When the "▭"symbol appears, it illustrate that the battery is low, so please charge it; if the battery has been rest more than 1 weeks, you'd better charge it to 2 grid power and then go on to rest it.
2. In the charging process, "▭" will flash until the battery is full, "▭"means the battery is full.
3. After charging, plug out the charger, and disconnection the instrument.

4.2 STANDARD MEASURING PROCEDURE

⚠ **CAUTION：** In order to avoid damage to equipment, do not try to measure the voltage over 25AC/DC; not measure constant voltage source; after measuring the high-voltage battery, while continuing to measure low-voltage battery, the pen must be short connected to discharge the capacitor

1. Join the pen, connect the four terminals, SOURCE + / - and the SENSE + / -.
2. Press the “Power” button, wait for 3 minutes warming-up time to ensure the instrument stability.
3. Use the red pen to connect positive pole, and use the black pen to connect the negative pole, external terminal connected to “SOURCE”, the internal terminal are connected to “SENSE”. When pen contact with the battery electrode, downward pressure the pen, so that reduction to the table inside the terminal pen inside, all the SOURCE and the SENSE terminal is a good contact.
4. When the measurement has been completed, disconnect the battery connection, and turn off the power.

NOTE: In the measurement, if “OF” appears on the screen, it said that resistance or voltage exceeds the device range; when the resistance value display "- - - -", it said that can not be measured, the circuit breaker may exist t, or the contact between the pen and pole are not good, it may be due to contact resistance relative to the measurement range too; In addition to automatic shutdown mode, please do not press the power button at the same time, and other keys, in case the same time, press the Power key and other keys, please press the Power button Close equipment, continue to operate may make all the calibration information is lost, no longer correct measurements; when the table open pen, a sensor voltage will be displayed in the instrument, it is not equipment failure.

4.3 COMPARISON

This function is to compare the measuring resistance and voltage values and the presetting resistance and voltage values. If the comparison is failed, then the red “×” will be lighted up, and the opened buzzer will works; If the comparison is success, the green “ √ ” will be lit up.

In the measuring interface, press the “COMP” button to open and shutdown the comparison function. When “COMP” symbol appears on the screen, it means this function is working.

Follow the steps shown below for changing the parameters:

1. Enter the comparison interface

Press COMP button at least 3 seconds until the “SET” appears on the right of the screen.

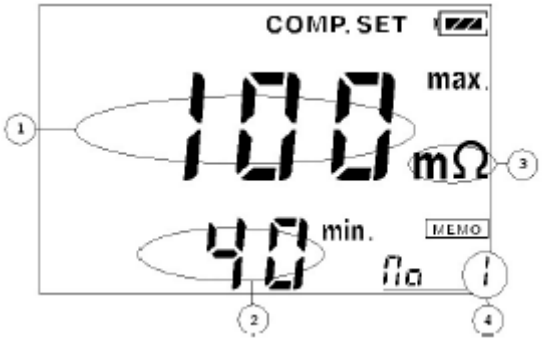


Figure5 Comparison parameters setting interface

The comparison interface is as shown as Figure5, ① is the upper value of inner-resistance,② is the lower value of inner-resistance, ③ stands for the present setting is inner-resistance or the voltage, ④ is the comparison group.

2. Set the comparison group

In the comparison interface, press “←”, “→” to move the cursor to the group setting place, press “ ↑ ”, “ ↓ ” to change the group number, the maximum is 10, the minimum is 1.

3. Set upper and lower inner-resistance values

a. Press "→" to move the cursor to the highest position of inner-resistance maximum, refers to Figure6.

b. Press "←", "→" button to switch between the setting values, press " ↑ ", " ↓ " to increase and decrease the setting values within in 0m to 2000mΩ.

Figure6 inner-resistance upper and lower value setting

Tip: the upper value must be bigger than the lower value, at least be equal, the logical relationship of compare voltage and resistance condition is "and".

4. Set upper and lower voltage values

a. Press "→" to move the cursor to the highest position of voltage maximum, refers to Figure7.

b. Press "←", "→" button to switch between the setting values, press " ↑ ", " ↓ " to increase and decrease the setting values within in 0V to 20V.

c. Change the group value to set comparison values of other groups, the previous value will be set automatically.

Figure7 upper and lower voltage setting

5. Complete the setting

After all the setting has been finished, press "COMP" button to quit, if press "POWER" button to quit, that will lead the save failure, if forget to press any button, the instrument will turn back to the comparison interface after 1 minutes rest.

Tip: before pressing "COMP", all the values are stored in the memory, the setting values will be stored in hard disk until pressing "COMP" button, pressing other button to quit is useless.

4.4 START/SHUTDOWN THE BUZZER

The buzzer works when the comparison is failed, press " " to start/shutdown the buzzer. When " "symbol appears indicate the buzzer is working, otherwise, it is shutdown.

Tip： There will be a short buzzer when press any button no matter the buzzer is started or not.

4.5 HOLD

This function can hold the current interface and remain the same, press "HOLD" button to hold or

release this function, when “HOLD” appears on the screen, that mean this function works.

Tip： It is only used in the measuring status, in that case only “POWER” and “HOLD” button will be still on work. You should press this button for less than 3s, otherwise, it will enter in the “history data view” interface.

4.6 VIEW HISTORY DATA

This instrument can store 99999 groups of measurement data, user can view and edit data, follow the operations below:

1. In the main interface, press “HOLD” button for at least 3s to enter the history data interface, which is as shown as Figure 8.

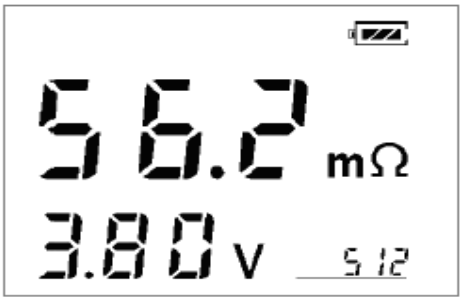


Figure 8 view history data interface

2. Press “ ↑ ”, “ ↓ ” to increase / decrease the data number.

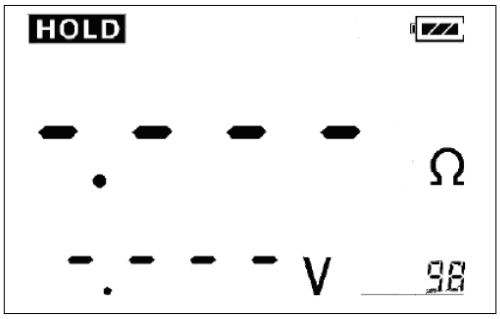


Figure 9 not measured data set display

3. Press “HOLD” button to exit.

4.7 CALIBRATION

There are zero calibration and full range calibration. Zero calibration is to calibrate the inner-resistance and voltage at the zero point; full range calibration is to calibrate the inner-resistance and voltage at the full range. Both calibration insist of a cycle, the first is zero calibration, the second is full range calibration, and then the third one will cycle to zero calibration.

The steps of zero calibration are as follows:

1. Short connect the two SOURCE pen and two SENSE pen.
2. Press “ADJ” button until “0.Adj”appears on the screen, then the calibration has began.
3. Until “0.Adj”disappeared and green light flashed, it means the calibration is succeed, otherwise, the red light flashing with a buzzer means the calibration is failed.

The steps of full range calibration are as follows:

1. Connect the pen to the 100mΩ resistance which is attached in the product.
2. Press “ADJ” button until “0.Adj”appears on the screen, then the calibration has began.
3. Until “0.Adj”disappeared and green light flashed, it means the calibration is succeed, otherwise, the red light flashing with a buzzer means the calibration is failed.

Tip： In the full-range inner-resistance calibration, the access resistance is 100mΩ, and in the full-range voltage calibration, the access voltage is 20V dc constant voltage source. In the zero calibration process, to ensure a good short connection with four pens, only the SOURCE and SENSE pen are both shorted then it will show 0.

4.8 BATTERY SHORTAGE TIPS

There will be a prompt symbol "▭"in the battery situation, at that time, you should charge the battery to ensure the normal operation..

4.9 SHUTDOWN AUTOMATICALLY

The default shutdown time is 30 minutes, user can close this function or decrease the shutdown time to 15 minutes, the detail procedure is as following:

1. Press the POWER button to power off;
2. Press POWER and "HOLD" button simultaneously;
3. Press "HOLD" button for a few seconds, and then appears the shutdown setting interface, shown as 错误！未找到引用源。
4. Press the "HOLD" button again, it will change, 15 minutes and 30minutes are selectable; displaying time is 30 minutes, press "HOLD" button again to turn off the automatic shutdown function.
5. Press POWER button to power off, then press POWER button again to power on.

Figure 10 Automatic shutdown interface

APPENDIX

OPERATION NOTICES

In order to better use of device before operation, we remind you of the following notices:

- Do not try to measure the voltage which is more than 25V.
- In the measurement, it should ensure that adequate ventilation, because sometimes during the measurement electrodes and the battery electrode contact will produce sparks and flammable gases, such as hydrogen.
- Do not unauthorized disassembly circuit boards, so as to avoid communication errors or damage to equipment.
- Do not try to plus a voltage at the positive terminal (SOURCE +) and measurement terminal (SENSE +) or negative terminal (SOURCE-) and measurement terminal (SENSE-) this will damage equipment.
- This instrument has no waterproof and dustproof functions, in order to avoid damage, please do not use it in humid and dusty environments.
- Before using this product make sure wire insulation is not damaged, and the pen has no unusual pens nudity, or please stop use and replace with new matching pen.
- Do not use this instrument at the sun, heat, humidity and aerosol environments, in these cases, the product may be damaged.
- Do not use it at the strong electromagnetic interference or electrostatic charge place, otherwise they will produce erroneous results.

HOW TO MAINTENANCE

You are using the technical well designed device. The following suggestions will help you protect from mistake of incorrect operations and good for conducting after sales service.

- Please conduct calibration operation at least once half a year so as ensure the data precision;
- Users should uninstall the original system before upgrade, and then install the latest software；
- Please operate under system operation manual guidance, other incorrect operation might damage the device;
- Keeping the device dryness. Those kinds of liquid such as water and humidity might damage the circuit of panel.
- Keeping the device cleaning ,don’t placed dusty and dirty environment, otherwise might damage the panel of device;
- Don’t placed the device in heater environment ,it might shortening the life of components and lead to accident;
- Don’t placed the device in colder environment ,because of the humidity might affect the performance of components of device;
- Don’t knock and shake the device heavily as for these actions might break the component of the device;
- Using matched and approved parts by supplier while conducting replacement of pares. Any unauthorized parts, modified parts might affect device performance and out of after sales service;
- Always saving the test data such as formation and grading data to prevent from losing data in case of suddenly broken.

Correct use and maintenance of device will good for improving device performance. By our long-term customer investigation and after-sales service practice has shown that device broken in many cases are because of improper operation or neglect correct method of maintenance, if the device is not working properly, we recommend customer reference at the product's user manual or contact the advisory service timely.

AFTER SALES SERVICE

SERVICE ITEMS

- **Free technical training:** We are providing free pre-sale and after-sale technical training course along with specialized technical engineers working for your service timely;
- **Telephone consultation service:** For any operation problems, dial at consultation service line: 800-830-8866 for help, our technical supporting engineer will work out proper solutions for you. The consultation time according to daily regular work time of supplier;
- **Troubleshooting support:** We will provide the suitable solutions regarding of how to operation the device ,how to repair the device and how to replace the component ,etc .If could not solve the problem by technical support person guidance after receiving the message of customer consultation, we will try our best to work out the suitable solution to customers. Make sure that the device is in the best working condition;
- **Response time:** If the case was reasonable and required supplier assigns qualified technical support engineer to customer location for troubleshooting repair, we will try to arrive within promised time since we work out the troubleshooting solutions. Service time according to daily conventional working hours, that is from Monday to Saturday 9:00 .am to 18:00 .pm (Public holidays are exception);
- **Others:** We offer one year free maintenance, long-term software upgrade and tracking services.

EXCEPTION

The following items are not limited in after sales service rules.

- Any accidents such as transportation, delectation, misuse, abuse or breach of contract occurred by customer or agents or any third party;
- Replaced and modified any non-supplier providing or permitting parts of component;
- Any malfunctions occurred by unauthorized operation or non-supplier providing component;
- Any disasters of lightning strike, fire damage, flood, war, acts of violence or other similar event;
- Repaired and modified by other non-supplier assigned technical support person;
- Other service place unauthorized by supplier.

REPLACEMENT

- We will reserve the right of taking the replaced component back which was considered necessary to investigate the reason of fault;
- During replacement operation of spare parts, we reserve the right of offering used spare parts which at structure, specification, function and appearance are equal with the replaced component;
- Using and non-supplier provided spare parts by supplier authorized;
- All the replacing and replaced component belongs to supplier;
- The warranty period of repair parts ("replacing component") used in repairing the device is 1 year since installed in the device or the rest warranty period of device (adopting the longer one alternatively). For avoidance of doubt, Warranty period does not extend while after conducted repair or replacement operation. If customer failed to delivery the replaced component to supplier within 10 days, should pay the money according to spare part price list.

CUSTOMER OBLIGATION

In order to perform best after sales service, customer should be responsible for compliance with the following items:

- **Provide request information：** Please prepare all the useful information before consult with technical support person, such as device No, device Model No, and device working status,so that our engineer can make judgment quickly;
- **Describe the problem：** Customers should describe the problem of device, so that technical

engineer can work out the troubleshooting solution according to concrete contents;

- **Cooperate with technical engineer:** Taking instructions and operating under technical support engineer guidance.

If couldn't solve the problem by telephone consultation service, we recommend as follows:

NOTE： Customer should carry out above of consultation procedure first, after we worked out the final solutions, and then assign the qualified engineer to customer location for repair.

- Allowed technical support engineer to operate the device;
- Providing necessary facilities to technical support engineer for use of repair;
- In order to provide services effectively, customer should arrange a staff whose is familiar with workshop environment and the security policy to accompany with our technical support engineer during perform repair operation;

The after sales service is subject to the latest <After sales service manual>, please contact us if there is any questions, we will offer the wholehearted service for you.

CONTACT NEWARE

Thank you for using “NEWARE” brand products, we hope our products can become your profit assistant in the future .We provide a variety of customer service for you and help you to quickly solve the problem that may arise while operating the device. For rapid and effective to solve the problem, we recommend that contact us in the following accesses:

Free consultation service line: 800-830-8866800-830-8866;

Visit company website：www.neware.com.cn;

Tel：0755-83108866，83108867，83108868;

Fax：0755-83109966

Bus No：N9，15，44，45，60，67，102，201，210，216，218，222，324，328，374，388 get off at “Xia Mei Lin Market” bus station.

Post ID：518049

Company address: No.4 floor, An Tong Industry building, No.207 of Mei Hua Road, Xia Mei Lin subdistrict, Fu tian district, Shenzhen city, Guangdong Province, China.

Note： The map is provided by www.chachaba.com .